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ABSTRACT

This study examined the effects of using expert models on the reflective thought of preservice special educators during classroom instruction. Nonintervention students completed seminars emphasizing Stalling's Active Teaching and Learning and Learning to Teach in Inner City Schools and the Diverse Populations curriculum. The seminars included discussions around students' classroom experiences. Intervention students participated in those seminars, then completed eight seminars on: classroom management, student characteristics, teacher knowledge, monitoring behavior and academics, student knowledge and learning, instructional strategies, student behavior and behavioral strategies, and instructional assessment. Each seminar included videotapes and audiotapes of expert teachers reflecting on instruction. Student teachers read weekly case studies describing expert teachers and offering quotes and examples of how teachers reflected upon the eight categories. Student teachers reflected on how each topic might influence their students and classrooms. Both groups were observed and videotaped twice while delivering instruction. A stimulated recall procedure obtained their reflections on the videotaped instructional sequence. Results found no notable between-group differences in the percentage of comments in each category. The largest category of comments for both groups was strategies, followed by student characteristics, then teachers' goals and expectations for students. (Contains 30 references.) (SM)

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Transferring Reflective Thought Used by Experienced Special Educators with Student Teachers

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The situated nature of cognition suggests that learning should take place in authentic, contextual settings (Borko, 2000, Brown, 1989). Recent perspectives on teacher training support this notion and argue that the training of novice teachers should include extensive experience in the classroom as well as exposure to diverse classroom environments. Several recent studies have implied that educating learners with special needs entails particular instructional and cognitive skills (e.g., Bartelheim & Evans, 1993; Bay & Bryan, 1991; Blanton, Blanton, & Cross, 1993; Cambone, 1991; 1992; Stough & Palmer, 1998). In examining skilled performance, a number of researchers (e.g., Rogoff & Lave, 1984; Perkins & Solomon, 1989) have pointed out the contextual nature of expert knowledge in that it appears closely connected to the domain in which it is developed. The optimal context, therefore, for training skilled special educators would seem to be in the special education classroom with all of its complexity and diversity of student needs.

Suggestions for necessary teacher competencies for novice special education teachers abound (e.g., Council for Exceptional Children, 1998; Gettinger, Stoiber, Goetz, & Caspe, 1999; Graves, Landers, Lokerson, Luchow, & Horvath, 1993; Knott & Asselin, 1999) and competency-based teacher training is common in the field of special education. In addition, a number of field-based approaches to teacher training are used to bridge the gap between theory and practice for student teachers. In the following section we review approaches that incorporate contextual learning in their development of competencies in novice teachers, namely, apprenticeship models, teacher reflection models, case-based training, and the use of expert teacher models.

Apprenticeship Models of Teacher Training

The most common form of university-level training of new teachers in recent years has been through several years of teacher education courses followed by an internship as a student teacher. Student teaching is typically one semester-long and serves, in essence, as an apprenticeship for novice teachers. More recently, early field experiences served as extensions of these apprenticeship experiences (McDiarmid, 1992) and as vehicles by schools of education to extend and diversify the apprenticeship experiences that teacher candidates receive. A popular model of designing early field experiences, the Professional Development School (PDS) model,

teacher education coursework includes an increasingly larger percentage of fieldwork in schools each semester. As a result, by the time students are placed in student teaching settings, they may have accumulated hundreds of hours of experience in schools.

In both the traditional student teaching and the PDS models, much of the apprenticeship experience is incumbent upon the quality of the cooperating classroom teacher who hosts the student teacher. Training with the PDS model increases the probability that student teachers, because they are placed with a wider variety of cooperating teachers, will be more likely to be exposed to teachers that demonstrate effective instructional and behavioral strategies. However, even in cases in which a cooperating teacher is highly skilled, school culture typically does not allow for extensive time in which these cooperating teachers can discuss their instructional decisions with their student teachers. In addition, while research on the training of novice teachers (see Berliner, 1986; 1987) suggests that novice teachers may be instructed to use similar routines and strategies as do expert teachers, it is often the case that expert educators (such as a cooperating teacher) have difficulty in clearly communicating the reasons for their instructional decisions. Findings in the field of expertise suggest that this difficulty is due to the automatization of the behaviors that an expert develops: Their expertise is not easily accessible at a conscious level. The implications are that it is difficult for the supervising teacher to explain why he or she makes certain instructional decisions in the classroom-, which may limit the effectiveness of the apprenticeship model of student teaching training, regardless of the expertise of the supervising teacher.

Teacher Reflection

Teacher preparation programs have placed increasing emphasis on the importance of teacher reflection since the mid-1980s. Schön (1983) refers to reflective practices as the ability to integrate professional experience with research to produce solutions to problem situations. Reflective practices in training are typically applied in situations, such as teaching, where material is ill-structured and where there is no obvious solution to problems that might arise in a given situation (Moon, 1999). Teachers who engage in reflective practice think critically about their

own teaching, inquire about the nature of effective teaching, and have developed "reflective capacities of observation, analysis, interpretation, and decision making" (Doyle, 1990). There is evidence (e.g., Bartelheim & Evans, 1993) that expert special educators regularly engage in reflective practice, taking responsibility for both the manner in which a lesson was presented and for whether or not their students understood the material.

Schön (1987; 1991) has investigated the ways in which professionals think about their work and solve problems in complex environments. Teacher training programs have attempted to increase reflection in teacher candidates through activities such as journaling, reflective writing, and modeling reflective thought. These activities are designed so that student teachers first describe an instructional event, lesson, or interaction with a student, and then examine how these events then challenge or change their existing belief. In special education teacher training, "curriculum coaches" who encourage student teachers to guide the thinking of preservice teachers about the needs of students with disabilities has been used as a method of increasing teacher reflection (Tomlinson, Callahan, Tomchin, Eiss, Imbeau, & Landrum, 1997).

Case Studies

An alternative method for transferring expertise, while still providing a real-world example, is with the use of cases. Cases used in teacher training typically incorporate descriptions of teaching and narratives that exemplify competent teaching in the classroom (Doyle, 1990; Leinhardt, 1990; Lampert & Ball, 1998; Merseth, 1996; Sykes & Bird, 1992). Teacher educators such as Schön (1991) and Shulman & Colbert (1988) have used cases to stimulate reflective thought in novice teachers with the end objective of developing reflective practicing teachers. Lampert and Ball (1998) and Berliner (1988) suggest that a library of videotaped expert cases would be helpful to novices in acquiring instructional skills that are used by effective teachers in their classroom. While some researchers have focused on the use of case studies for the development of teachers of general education students, case studies have also been developed for use in special education teacher training (e.g., Bay & Bryan, 1991; Cambone, 1990) but the effectiveness of using such cases with preservice teachers has not previously been assessed.

Expert Models

Researchers have fruitfully used the construct of expertise to conceptualize the knowledge that superior teachers that teach in regular education classrooms possess (e.g., Berliner, 1986; Borko & Livingston, 1989; Carter, Cushing, Sabers, Stein, & Berliner, 1988; Peterson & Comeaux, 1987; Shulman, 1986). Research on the training of novice teachers (see Berliner, 1986; 1987) suggests that novice teachers may be instructed to use similar routines and strategies, as do expert teachers. However, there have been few investigations of effective teachers of learners with special needs. Blanton, Blanton, and Cross (1993) concluded that "we know very little about the knowledge possessed about instruction by regular and special education teachers, and especially how these groups of teachers think about, discuss, and approach instruction for special learners." This gap in the research literature on teacher cognition is particularly notable, as it would seem that teacher cognition within special education settings would be particularly complex. Special education teachers continuously must adjust their teaching techniques because of the need to modify instruction for their students with learning problems (Algozzine, Morsink, & Algozzine, 1988; Englert, 1983), which suggests that these teachers are required to have a large knowledge base of effective strategies that they apply in the classroom.

Studies on expertise also support the argument that in order to develop expertise, teachers need sufficient experience in the classroom in order to develop their skills. Expert teachers, in addition, have a large knowledge base about their students and about strategies to apply in the classroom-, which implies that novice teachers also need sufficient exposure to students and to instructional settings in order to develop this knowledge base.

Purpose of this Study

We are using data collected on expert special educators to attempt to transfer expertise to student teachers via a seminar for student teachers. In a Bay and Bryan (1991) study, it was found that novice teachers, after viewing videotapes of teachers instructing children with disabilities, increased their level of reflectivity after hearing audiotapes from stimulated recall procedures. A 1997 study by Tomlinson, Callahan, Tomchin, Eiss, Imbeau, and Landrum (1997) similarly examined the instructional decision-

making used by novice special educators. However, the effects of using audio and videotaped cases of special educators to facilitate transfer of teacher expertise have not been assessed.

We have found in previous studies (Stough & Palmer, 1996) that stimulated recall and collegial reflection increases self-reflection, while it circumvents the problem of automaticity in expert educators. When teachers in the field have the opportunity to reflect on their teaching, such as in the stimulated recall procedure we have conducted, they find the procedure useful in assessing and understanding their teaching practices. In designing the following study, we wished to assess whether this technique could facilitate the transfer of expertise through the provision of models of expert special educators in real-world contexts to student teachers.

Method

Participants

Participants consisted of thirty-four preservice special educators enrolled in their student teaching seminar at a large southwestern university. Most of these students were in their early 20's and simultaneously completing their bachelor's degree in addition to the requirements for obtaining state teacher certification in the area of special education. Thirty-three of the students were female, while one was male.

Procedures

All participating student teachers completed an initial survey in order to obtain descriptive data about their past teaching experiences and about their knowledge of their assigned student teaching classrooms. The organization and schedule for the student teaching seminar was explained and students were invited to participate.

Non-intervention group. During the first year of the study, twenty student teachers that were completing their student teaching in the area of special education consented to participate in this study. These students participated in a student teaching seminar that lasted for approximately two hours per week over the length of a semester. These seminars were organized around Stalling's Active Teaching and Learning and Learning to Teach in Inner City School and with

Diverse Populations (1995/1996) curriculum. Stalling's curriculum is specifically designed for use with both prospective general and special education educators during the student teaching semester and includes topics and assignments that rely on experiences that students are expected to have during their student teaching semester. These seminars included discussions about their experiences in the classroom, along with assignments related to their student teaching experiences. Student teachers were encouraged to comment upon incidents of significance that occurred during their week in the classroom.

Intervention group. During the second year of the study, fourteen out of the sixteen the student teachers enrolled in the special education student teaching program consented to participate in the intervention. This "intervention group" also participated in the Stalling's seminar as described above but additionally received thirty hours of training as part of their student teaching seminars.

The supplemental training was developed from data collected from 19 expert special educators who were nominated by their direct supervisors and school principals as being effective teachers as part of Stough and Palmer's (1999) Expertise in Special Educators Project. From our qualitative analysis collected as part of this project, we selected eight of the most frequently mentioned analytical categories by these expert teachers in order to design our seminar topics (see Table 1). These categories, in order, were 1) Classroom Management, 2) Student Characteristics, 3) Teacher Knowledge, 4) Monitoring Behavior and Academics, 5) Student Knowledge and Learning, 6) Instructional Strategies, 7) Student Behavior and Behavioral Strategies, and 8) Instructional Assessment.

During these seminars, student teachers in the intervention group were introduced to each topic as an area of primary concern to expert special educators. Each seminar included videotapes and audiotapes of expert teachers reflecting upon their own instruction that illustrated these themes. Student teachers in this group were additionally given a weekly case study to read in preparation for the seminar that described one of the 19 expert special educators and provided quotes and examples of how these educators reflected upon these eight categories. Student

Table 1: Student TeachingSeminar Schedule

Week	Date	Prepare	Topic	Assignment
A	Jan 20		Community and Student Culture	
1	Jan 21	Case Study #1: Beth Martin	Classroom Management and Environment	Questionnaire & Consent (Self)
2	Jan 28	Case Study #2: Lorena Gomez	Student Characteristics/ Children and their families	
3	Feb 11	Case Study #3: Sharon Simons	Instructional Strategies/ Research on Effective Teaching	Consent Forms due from Students & Cooperating Teachers
4	Tuesday Feb 24	Case Study #4: Katy Baker	Teacher Knowledge/ Preparing for Peer Observation	
5	Thursday Feb 26	Case Study #5: Kimberly North	Monitoring Behavior & Academics/ Positive Behavior Management	
6	Mar 4	Case Study #6: Ellen Lang	Student Knowledge & Learning	Sign up for Videotaping Session #1 (Guided Reflection)
7	Mar 11	Case Study #7: Hillary Mathews	Student Behavior and Behavior Strategies	
8	Mar 18	SPRING BREAK!!! NO CLASS		
9	Mar 25	Case Study#8: Jamesha Birch	Instructional Diagnosis/Understanding Research on Effective Teaching	Sign-Up for Videotaping Session #2 & #3 (Stimulated Recalls)
10	Apr 1	Bring videotapes for review	Guided Reflection & Improving Classroom Organization and Management	
11	Apr 8		Planning Appropriate Lessons	
12	Apr 15		Linking Student's Knowledge with School Lessons	
13	Apr 22		Comparing Novice-Expert Reflections	
14	Apr 29		Analyzing Personal Change and Setting New Goals	

May 6th is the last day of student teaching

teachers participated in discussions about these materials and asked to reflect upon how the topic might influence the students and classrooms in which they were currently teaching. Each week, student teachers in the intervention group were asked to complete a weekly reflection assignment on the focus topic each week while they were in their respective classroom settings, and then to return to the next seminar prepared to discuss these reflective assignments as a follow-up to the previous weeks' seminar.

After the eight topical seminars were completed, the student teachers participated in a "guided reflection" about a videotaped instructional sequence in their classroom. This activity took place after the student teacher had been in their placement for approximately two months. Each student teacher in the intervention group was videotaped and observed in the classroom in which they were completing their student teaching. This videotaped session was followed (usually within 24 hours) by a guided reflection activity, wherein a researcher viewed the videotape with the student teacher and the instructional sequence in the videotape was discussed. In this activity, the discussion focused on topics that arose in the student teaching seminar and was used to support student teachers to reflect upon instruction in a manner similar to that used by expert teachers.

Stimulated recall procedure. Both groups of student teachers were observed and videotaped twice while delivering instruction after they had spent two months in their student teaching placements. A stimulated recall procedure (Ericsson & Simon, 1984) was used to obtain these students teachers' reflections about the instructional sequence that had been videotaped. This procedure replicated that used by other researchers in the field of teacher cognition (e.g., Peterson & Comeaux, 1987) in that these student teachers were asked to recall, to the extent possible, their thoughts and emotions during the classroom sequence. While researchers occasionally prompted comments from student teachers (e.g., "What were you thinking here?") efforts were made to minimize researcher comments while maximizing opportunities for comment by the student teachers. All comments by the research and the student teacher were simultaneously recorded on audiotape. Approximately forty-five minutes of audiotape was

obtained per recall session for a total of fifty-one hours of audiotape across all student teachers. These recall sessions occurred within forty-eight hours after the instructional sequence in order to extract the student teachers' thoughts and interactive decision-making.

Field notes. Immediately after each contact with a student teacher, researchers completed field notes in which they recorded technical notes (problems in collecting the data, special considerations for their subsequent contact with a particular teacher), analytical notes (analytical and conceptual reflections) and their general observations (the mood and tone of the session). Approximately two pages of notes were made for each student teacher.

Analysis

All stimulated recall recordings from student teachers were transcribed, analyzed, and coded following qualitative procedures discussed by Glaser and Strauss (1967) and Strauss and Corbin (1990). Approximately 1,400 transcribed pages were generated from these 34 student teachers. Data obtained from interviews, observations, field notes, and stimulated recall procedures were incorporated into the qualitative analysis of the data. Axial and selective coding was used to produce a conceptual and grounded model of instructional decision-making in each group of student teachers. Differences in the models were noted and a storyline for each model was developed in order to describe the interrelation of the categories.

Our qualitative analysis described above illustrated that there were differences in the ways in which the two student teacher groups thought about and responded to instructional events in the classroom. For the purposes of this paper, therefore, and in order to compare quantitatively the responses of the intervention and non-intervention group in the stimulated recall procedure, a content analysis of each stimulated recall transcript was completed. As part of this procedure, the text of each transcript was divided into thought-units. Each of these units was then sorted into one of the categories that had emerged as part of the qualitative analysis. At the end of analyzing the two stimulated recall transcripts from each student teacher, the number of comments falling into each category was tallied and summed. The number of comments that fell into each category was then calculated as a percentage of the total number of comments/thought-units expressed by

each student teacher. Calculating this percentage score then allowed the researchers to compare the relative number of comments across the student teachers and to control for the differences in the total number of comments made by different student teachers. The percentages across the student teachers within each group were then summed and averaged for each category.

Results

For the purposes of this paper, we will present the results from our quantitative content analysis the stimulated recall transcripts obtained from the student teachers. A total of 6,393 thought-units were coded for the 20 non-intervention student teachers, for an average number of 320 statements per student teacher. A total of 4,762 units were coded for the 14 student teachers in the intervention group, for an average number of 340 comments per student teacher. Table 2 presents the averaged percentage of thought-units expressed by both groups of student teachers. Using categories developed through our earlier qualitative analysis of the data (Stough & Palmer, 1998) the mean percentage of thought-units in each category were summed across each group of student teachers to produce the figures found in Table 2.

The largest category of comments for the two groups was in the area of "strategies." This category included comments about what actions the student teacher implemented or was considering implementing during the instructional sequence. The intervention group had an overall mean percentage of 36% thought-units that were categorized as a type of strategy, while the non-intervention group had 39%. Within this category of "strategies," the non-intervention group as a whole made more statements about classroom management (10%), instructional (15%), and monitoring strategies (5%) than did those student teachers in the intervention group. In contrast, the intervention group made more comments about behavioral strategies (10%), as compared to the non-intervention group, which made only 7% of their comments in this category.

In examining the categories in Table 1, it can be seen that for both the intervention group and the non-intervention group 33% of the mean percentage of their reflective comments focused upon characteristics of the students that were being taught. These comments included teachers'

Table 2: Mean percentage of responses from non-intervention and intervention groups

Category	Non-Intervention		Intervention	
I. Strategies (Total)	39%		36%	
Instructional		15%		13%
Classroom Management		10%		8%
Behavioral Strategies		7%		10%
Monitoring		5%		3%
Planning/Preparation		1%		1%
Instructional Aides		1%		1%
II. Knowledge of Student (Total)	33%		33%	
Student Characteristics		13%		9%
Student Behavior		11%		13%
State of Mind		9%		11%
III. Goals & Expectations	6%		8%	
IV. Teacher Knowledge (Total)	6%		6%	
Pedagogy		3%		1%
Class Routine		1%		1%
Task		1%		2%
Content		1%		2%
V. Student Outcomes	6%		7%	
VI. Teacher Emotions	5%		5%	
Positive		2%		3%
Negative		3%		2%
VII. Other	5%		5%	

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knowledge about the characteristics of their students, their observations about student behavior during the instructional sequence, and hypotheses that the teachers made about their students' "state of mind." While the two groups made a similar number of comments in this area, the intervention group referred more frequently to "student behavior" (13%) and student "state of mind" (11%) than did the non-intervention group. In contrast, the non-intervention group referred more frequently to "student characteristics" (13%) and than did the intervention group, which referred to "student characteristics" in 9% of their comments.

The third largest group of comments fell into the category of "teacher's goals and expectations for their students." These comments included those that referred to either what goals teachers had as part of their instructional sequence, or to either the learning or behavioral expectation that teachers had for their students. The intervention group made a percentage average of 8% of their comments in this category, while the non-intervention group made a total of 6% of their comments in this category.

The fourth most common comment made by these student teachers was in the category of "teacher knowledge." This category included comments that referred to the student teacher's knowledge of educational practice, including knowledge of the content that they were teaching, pedagogical knowledge of the most appropriate manner in which they should deliver the content, knowledge of the tasks at-hand at which the students were working, and general knowledge of the routine of the classroom in which they were student teaching. Overall, both the intervention group and the non-intervention group made proportionately the same number of comments (6%) in this category, but student teachers in the non-intervention group made more comments about "pedagogy," while the intervention group made more comments about the task at hand (2%) and the content (2%) that they were teaching.

The intervention and non-intervention groups differed slightly in the number of comments they made about student outcomes. These comments focused primarily upon the academic, emotional, and behavioral outcomes of the efforts of students in their classroom. For the intervention group, approximately 7% of the comments that they made referred to specific

academic or emotional outcomes that followed their use of strategies in the classroom while the non-intervention group made approximately 6% of their comments in this category.

The two groups made a similar percentage of comments that fell into the category of "teacher emotion," and 5% of their comments were in this category. However, student teachers who went through the intervention tended to make more positive statements about student outcomes, whereas student teachers in the non-intervention group tended to make more negative comments about their emotions. For both groups, the most common negative emotion that was consistently mentioned was "frustration" with student performance. There did not appear to be a specific positive emotion that was frequently mentioned, however, the tone of the positive emotions that were expressed tended to be ones of satisfaction with student performance.

For both groups, approximately 5% of their comments occurred less frequently than 2% of the time and were classified as a group as "other."

Discussion

In this study, we examined the differential effects of using expert models on the reflective thought of special education student teachers during classroom instruction. These expert models were provided through cases, audiotapes, videotapes, and discussion of their instructional decision-making in the classroom. This is the first attempt, to our knowledge, of using expert special educators to design media-supported cases for use with novice special educators. We are in agreement with Carter and Doyle (1988) that the knowledge of expert teachers tends to be "event-structured" and, as such, is closely tied to the particular classroom context and individual characteristics of the students within a given classroom. By designing cases of special educators that were situated in particular classroom contexts and by providing student teachers with the accompanying reflections of these teachers upon events that occurred during particular instructional segments, it was our intention to provide contextually rich cases of effective special educators who were reflective about their teaching.

In order to quantitatively compare the differences between our two groups of student teachers we analyzed only a portion of the qualitative data we had collected, namely the transcripts from the stimulated recall procedures. This analysis produced no notable difference between the two groups in the percentage of comments that fell into each category. While there was a slight increase in the gross number of comments that the intervention group of student teachers produced, again, this difference was not significant. We do not believe, however, that these results should be seen as a "no effect" result of our intervention-, our qualitative analysis of our complete data base has already shown that there are differences in the ways in which these student teachers described events in their classrooms, rather we suspect that the reductionist nature of our analysis was insufficient to capture the differences between these two groups. For example, comments that were sorted into the category "instructional strategies" included any comment, positive or negative, about the student teachers' use of strategies. As a consequence, the differences between these two groups may not lie in the number of comments that these student teachers made but in qualitative differences in how they responded to classroom events. A more precise interpretation of our results, therefore, may be that they highlight the shortcomings of using quantitative methods to analyze qualitative data.

Student teachers who participated in the stimulated recall procedure quickly became familiar and comfortable with the technique. Student teachers seldom relied on prompts from the researcher and readily and prolifically expressed their thoughts and emotions concerning the targeted teaching sequences. Teacher educators should consider the use of a modified stimulated recall procedure as an appropriate intervention in their training of preservice teachers. This technique is easily implemented and requires a minimum of supervision on the part of the teacher educator, while producing a maximum of opportunity for reflective thought. Sessions may be auditaped and reviewed by teacher educators at a later date, if desired, and thus give important insights into how preservice teachers cognitively process their own teaching.

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